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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: INOUE, et al.

Serial No.: 09/228,148

Group Art Unit: 2823

Filed: January 11, 1999

Examiner: MALDONADO, Julio J.

FOR: SEMICONDUCTOR DEVICE INCLUDING AN INSULATION FILM ON A
CONDUCTIVE LAYER AND MANUFACTURING METHOD THEREOF

P.T.O. Confirmation No.: 7239

#30/ Request
for
Reconsideration
6-9-03
JS

REQUEST FOR RECONSIDERATION AFTER FINAL REJECTION

BOX AF

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Date: May 27, 2003

Sir:

In response to the Office Action dated February 26, 2003, Applicants request favorable reconsideration of the above-identified application. Claims 9-18 are pending.

As a preliminary matter, it has been noted that the foreign patent documents listed on Form PTO-1449 submitted with the Information Disclosure Statement November 12, 2002, were not initialed. The Examiner is requested to confirm consideration of the foreign patent documents. A copy of Form PTO-1449 which had been partially initialed by the Examiner is attached hereto.

An Information Disclosure Statement was also filed on March 18, 2003. Applicants request consideration of the reference cited therein.

Claims 9, 10, 13 and 15-18 were rejected under 35 USC §103(a) as being unpatentable over Leong in view of Sasaki et al., and claim 14 was rejected under 35 USC §103(a) as being unpatentable over these references further in view of Wolf. Favorable reconsideration of these

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rejections is earnestly solicited.

In the Examiner's Response to Arguments, the Examiner explains that although Leong fails to teach using its silicon oxide layer 20 (presumably the Examiner intended "22") as an intrusion prevention film, Sasaki et al. teaches that silicon oxide can be used as an intrusion prevention film. As such, it is the Examiner's position that silicon oxide layer 22 of Leong can be used as an intrusion prevention film. In other words, it is the Examiner's position that silicon oxide layer 22 of Leong^{com} is an intrusion prevention film since Sasaki et al. teaches that silicon oxide is used as a material for forming its intrusion prevention film.

Leong teaches that the silicon oxide layer 22 is typically in the range of between about - 3000 to 4000 Angstroms in thickness (column 3, lines 49-54). Furthermore, Leong teaches argon implantation at an energy within the range of 40 to 140 KeV (column 4, lines 33-37). As such, it appears that Leong would correspond to the conventional structure shown in Fig. 16 of the present application.

In this embodiment, silicon oxide film 7 of Fig. 16 would correspond to the silicon oxide layer 22 of Leong. The specification discloses a thickness of this layer as 300 nm (page 13, line 1) which falls within the range of 3000 to 4000 Angstroms disclosed by Leong. As described on page 16 of the specification, when there is no spacer 6 in the structure of Fig. 1, the structure of Fig. 16 is achieved. In the structure of Fig. 16, if ions are implanted under the condition for improving the film property of portion of A, the ions would be implanted through inorganic SOG film 8 and silicon oxide film 7 at portion B to arrive at metal interconnection 5.

As such, the data provided in the present specification is sufficient to prove that the silicon oxide film 22 of Leong does not possess the characteristic required by claim 1 "to

substantially prevent the impurities introduced into said first insulation film from entering said conductive layer.”

Furthermore, Leong does not suggest that the silicon oxide film 22 can be is used as an intrusion prevention film because of the following reason:

Leong discloses that argon ions are implanted into SOG layer 24 in column 4, lines 9-14 for example, and that the total thickness of SOG layer 24 is 2000 to 2400 Angstroms in column 3, lines 66-68. Further, Leong states that the thickness of argon ion implantation is between about 2000 to 2400 Angstroms in claim 12.

According to the above disclosures of Leong, the range of the depth of ion implantation coincides with that of the thickness of SOG layer 24 and, therefore, it can be said that the implanted ions would not intrude into silicon oxide layer 22 irrespective of the existence of the silicon oxide layer 22.

As to Sasaki et al. as well, the silicon oxide film 31 thereof has no function to prevent the impurities introduced into the first insulation film from entering the conductive layer as set forth in pending claim 9.

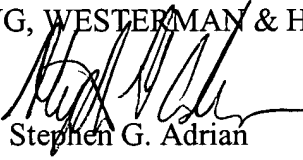
Applicants gratefully acknowledge the indication that claim 11 and 12 would be allowable if rewritten in independent form. However, for the reasons discussed above, it is respectfully submitted that all pending claims are in condition for allowance.

Should the Examiner deemed that any further action would be desirable to place this application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP


Stephen G. Adrian
Attorney for Applicant
Reg. No. 32,878

Attachment: Partially Initialed Form PTO-1449

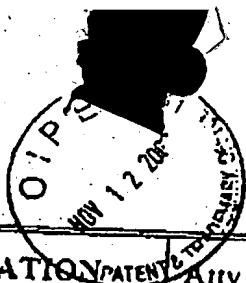
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Atty. Docket No. **970150A**
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INFORMATION DISCLOSURE STATEMENT PTO-1449	Atty. Docket No. 970150A	Serial No 09/228,148
	Applicant(s): INOUE et al.	
	Filing Date: January 11, 1999	Group Art Unit: 2823

U.S. PATENT DOCUMENTS

U.S. PATENT DOCUMENTS							
Examiner Initial		Document No.	Name	Date	Class	Subclass	Filing Date (If appropriate)
<i>Jun</i>	AA	5,818,068	Sasaki, et al.	10/98	257	59	09/21/99
<i>Jun</i>	AB	6,001,745	Tu, et al.	12/99	438	782	04/14/99
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						

FOREIGN PATENT DOCUMENTS

FOREIGN PATENT DOCUMENTS				
Document No.	Date	Country	Translation (Yes or No)	
<i>Jun</i> AK	9-312339	12/21/97	Japan	Abstract
<i>Jun</i> AL	9-246375	9/19/97	Japan	Abstract
<i>Jun</i> AM	EP 0 602 607 A1	6/22/94	Europe	Yes
<i>Jun</i> AN	0179563	11/27/98	Korea	Abstract
AO				
AP				
AQ				

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